SCIENTIFIC NOTE

First Record of the Endemic Hawaiian Scale *Colobopyga pritchardiae* (Hemiptera: Halimococcidae) on the Island of Hawaii

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Abstract. *Colobopyga pritchardiae* (Stickney 1934) (Hemiptera: Halimococcidae), an endemic Hawaiian scale insect associated with *Pritchardia* sp. was recorded for the first time on the Big Island. Notes on sites of collection, infested areas of host plants, and some behavioral aspects of the insect are provided.

Pupillarial palm scales, or halimococcid scales, include 21 species in five genera worldwide, and are associated with host plants in the families Arecaceae and Pandanaceae (Miller et al. 2005, Miller 1996, Koehler 1987, Deitz 1979, Beardsley 1963). Three endemic palm scales are known to occur in the Hawaiian Islands. *Colobopyga pritchardiae* was reported previously from the islands of Oahu and Molokai; *Colobopyga browni* was reported from the island of Oahu; and *Platycoccus tylocephalus* is known to occur on the islands of Oahu and Nihoa (Beardsley 1963, Nishida 2002). All three species of endemic palm scales are associated with *Pritchardia* sp. palms, known as "loulu" or fan palms, a complex genus of 25 different palm species restricted to the tropical Pacific islands with 19 taxa endemic to the Hawaiian Islands (Wagner et al. 1990). *C. pritchardiae* was reported as occurring on fruits, stems, and bracts of fruiting branches of *Pritchardia* sp. palms; there are no records of *C. pritchardiae* being found on other plant parts.

We began searching for palm scales on Hawaii to include in a host range testing program in quarantine for *Encarsia diaspidicola* (Hymenoptera: Aphelinidae). This parasitoid is a diaspidid specialist and a prospective biological control agent for the white peach scale, *Pseudaulacaspis pentagona* (Hemiptera: Diaspididae), a serious pest on papaya. There are no native diaspidids in Hawaii. However, the endemic palm scales were once classified as diaspidids, and therefore we felt they would be the ideal species to include in our assessment of possible nontarget effects during host range testing of *E. diaspidicola*.

C. pritchardiae was found at two different locations in wet forests near Hilo on mature *Pritchardia beccariana* (Arecales: Arecaceae) palms. At one of these locations (GPS coordinates: N 19° 34.558' W 155° 11.166°, elevation: 851 m, accuracy: 12.6 m), three individual *P. beccariana* palms were found. On two of the three palms, the fruiting structures were accessible using a step ladder, and upon examination both of these palms were found to be infested with *C. pritchardiae*. At the other location (GPS coordinates: N 19° 35.125' W 155° 09.680', elevation: 681 m, accuracy: 16.8 m) a lone *P. beccariana* plant was found infested with *C. pritchardiae*, with no other *P. beccariana* in sight. The fact that three out of three examined palms were found infested suggests that *C. pritchardiae* is common in the area but the number of examined palms was too low to draw any conclusions. We also examined two *P. beccariana* palms at Floribunda palm nursery in Kurtistown but found no evidence of infestation by endemic scales at that location.

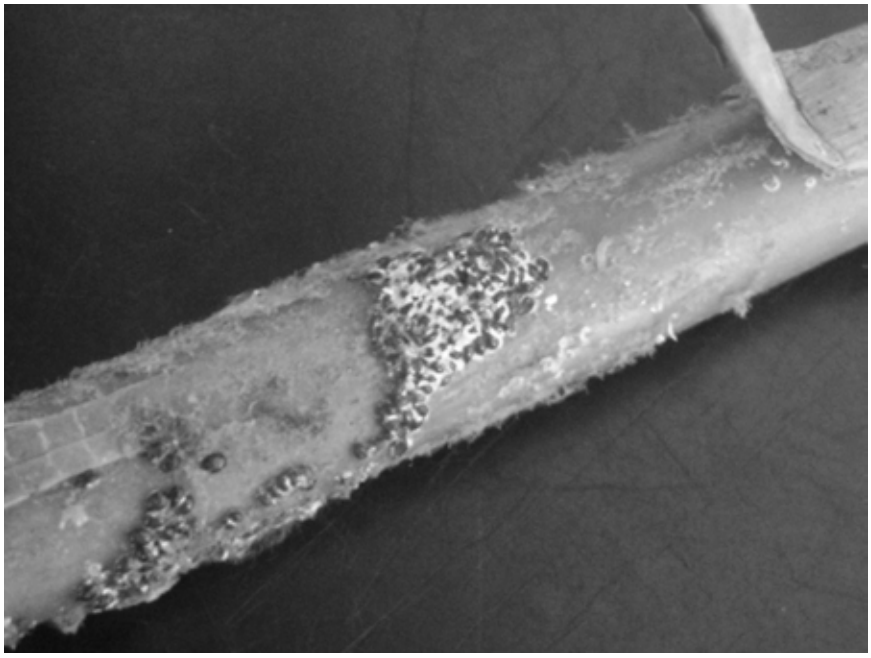

Figure 1. Mature *C. pritchardiae* scales on the stem of the fruiting structure of *P. beccariana* after the sheathing bract is removed.

Examination of a total of 13 fruiting branches at the two sites, where *C. pritchardiae* was found, confirmed earlier reports that *C. pritchardiae* is only associated with the fruiting structures. In all cases, we observed scales only on the stems of the fruiting branches underneath the sheathing bracts, and not on the fruits or exposed parts of the fruiting structures. The insects were observed in tight groups with approximately 40-60 individuals per group (Figs. 1 and 2). In six of the groups observed, sub-adult scales (Fig. 2.) were located at or very close to the base of the sheathing bracts, suggesting that crawlers move towards areas under the bracts before settling. Adult scales (Fig. 1.) were observed at a few centimeters distance from the base of bracts where the sheath was less tightly enclosing the stem or even partly opened. The location of adults some distance from the base of the bract is possibly due to the elongation of the stem internodes during the growth of the fruiting structure since scales are sessile after the crawler stage settles. The elongation of the internodes may expose the scales to the environment outside the protective bract over time. But the fully mature scale has a hardened shell, and this covering may provide protection against water loss, wet conditions, and natural enemies (Gullan and Kosztarab 1997).

Four attempts were made to transfer *C. pritchardiae* crawlers onto *Pritchardia* sp. seedlings. The presence of live, active crawlers on the seedlings was confirmed after the transfers, but the crawlers never settled on the plants.

Acknowledgements

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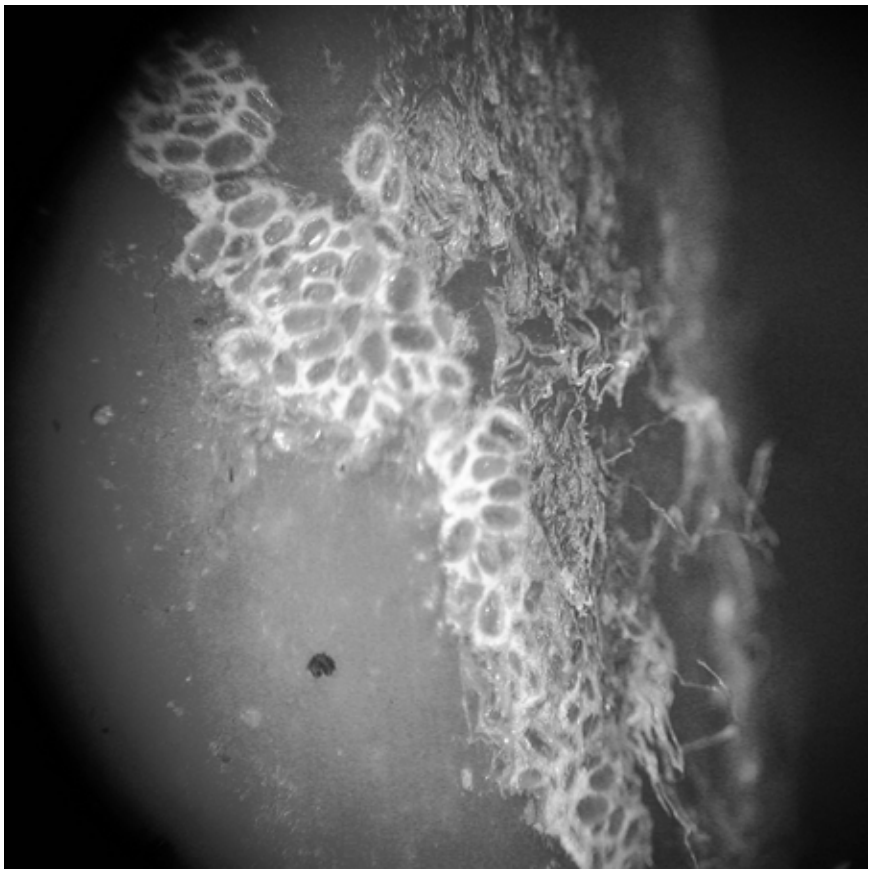

Figure 2. Sub-adult *C. pritchardiae* scales on the stem of the fruiting structure of *P. beccariana*, at the base of sheathing bract after the sheathing bract is removed.

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